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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/665,304	09/18/2003	Madapusi K. Keshavan	49524/CM/M277	5445
23363 7590 10/17/2007 CHRISTIE, PARKER & HALE, LLP PO BOX 7068 PASADENA, CA 91109-7068			EXAMINER MAYES, MELVIN C	
			ART UNIT 1791	PAPER NUMBER
			MAIL DATE 10/17/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/665,304	KESHAVAN ET AL.	
	Examiner	Art Unit	
	Melvin Curtis Mayes	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 July 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5-12, 25-39 and 50-56 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-12, 25-39 and 50-56 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

(1)

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

(2)

Claims 1-3, 5-12 and 50-54 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 1 and 53 now claim that the density is selected "in response to the volumes of said substrate and said ultra hard material" and Claim 51 and 52 claim that the densities of the two portions are selected "in response to the volume of the substrate and the volume of the ultra hard material." The specification does state that sintering-induced stresses is volumetric shrinkage difference compounded by disproportionate substrate and ultra-hard material volumes and discloses reducing sintering-induced stresses by using a substrate that is not fully densified prior to sintering. However, the specification does not describe that the density of this substrate is selected in response to the volume of the substrate and ultra hard material. The specification discloses using a partially densified substrate having a density of 40-70% of full density or porosity of 1-50%, however there is no description of the density being selected in response to

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the volumes of substrate and ultra hard material or the densities of the two portions of the two portions of a substrate being selected in response to the volume of the substrate and the volume of the ultra hard material. There is no description in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of selecting the density of the substrate based in the volumes of substrate and ultra hard material.

(3)

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

(4)

Claims 1-3, 5-12 and 50-54 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 53 now claim "wherein the density is selected "in response to the volumes of said substrate and said ultra hard material" and Claim 51 and 52 claim "wherein the densities of the two portions are selected in response to the volume of the substrate and the volume of the ultra hard material." Is this "wherein the density (or densities) is selected" a positive step of selecting density based on the volumes or merely a result of the substrate having at a least a portion of density less than 100% of full density? This is not clear.

Claim Rejections - 35 USC § 103

(5)

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

(6)

Claims 25-33, 37-39, 55 and 56 are rejected under 35 U.S.C. 103(a) as obvious over Eyre et al. 6,193,001.

Eyre et al. disclose a method of making a cutter comprising: providing an embossed sheet of ultra hard material such as diamond and binder (ultra hard material which is not fully densified); providing a substrate comprising an embossed sheet of tungsten carbide particles and binder and a presintered tungsten carbide substrate body (thus a substrate having a non-uniform face on the substrate material); placing the sheet of ultra hard material on the embossed face of the substrate; and sintering under high pressure and high temperature to bond the substrate material sheet and the ultra hard material to bond completely to each other and to the substrate body (col. 3-4).

By providing a substrate comprising an embossed sheet of tungsten carbide particles and binder and a presintered tungsten carbide substrate body, and thus a pre-sintered substrate of first portion having first density less than 100% and second portion of different second density or fully dense, a substrate is obviously provided having a first portion of density selected which provides a desired level of constraint to the shrinkage of the ultra hard material during sintering as claimed, which controls residual stresses as claimed in Claim 33, which minimizes the constraint provided to the shrinkage as claimed in Claim 37 and which minimizes shrinkage

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difference as claimed in Claim 38. As disclosed by Applicant, a reduction in the shrinkage constraint (the desired level) of the ultra hard material layer during sintering is by providing a substrate of at least a portion which has a density in the range of 40-99% of full density or of 1-30% porosity. Eyre et al. discloses providing a substrate having a sheet of carbide particles and binder, which substrate encompasses substrates having a portion with density which will obviously reduce shrinkage constraint of ultra hard material during the sintering process and thus provide the desired level of constraint.

(7)

Claims 25-33, 37, 38, 55 and 56 are rejected under 35 U.S.C. 103(a) as obvious over JP 53-134804.

JP 53-134804 discloses a method of making a cutting tool comprising: providing a pressed material of cubic boron nitride and ceramic material in mixture with camphor (ultra hard material solid which is not fully densified and a porous material)); providing a substrate comprising a WC-Co sintered hard alloy plate and a paste of WC-Co powder applied to the plate; placing the pressed material on the paste; and hot-press sintering under high pressure and high temperature (Translation, Working Example 1).

By providing a substrate comprising a comprising a WC-Co sintered hard alloy plate and a paste of WC-Co powder applied to the plate, and thus a pre-sintered substrate of first portion having first density less than 100% and second portion of different second density or fully dense, a substrate is obviously provided having a first portion of density selected which provides a desired level of constraint to the shrinkage of the ultra hard material during sintering as claimed, which controls residual stresses as claimed in Claim 33, which minimizes the constraint provided

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to the shrinkage as claimed in Claim 37 and which minimizes shrinkage difference as claimed in Claim 38. As disclosed by Applicant, a reduction in the shrinkage constraint (the desired level) of the ultra hard material layer during sintering is by providing a substrate of at least a portion which has a density in the range of 40-99% of full density or of 1-30% porosity. JP 53-134804 discloses providing a substrate having a paste of WC-Co powder applied to a sintered plate, which encompasses substrates having a portion with density which will obviously reduce shrinkage constraint of ultra hard material during the sintering process and thus provide the desired level of constraint.

Response to Arguments

(8)

Applicant's arguments filed July 26, 2007 have been fully considered but they are not persuasive.

Applicant argues that Eyre et al. do not disclose a pre-sintered substrate or disclose, teach or suggest that the densities of the two portions are selected for providing a desired level of constraint during sintering. Applicant argues that in JP '804, the press-molded, half-sintered or sintered layer does not appear to be the substrate and does not disclose a pre-sintered substrate.

(9)

Eyre et al. disclose providing a substrate comprising an embossed sheet of tungsten carbide particles and binder and a presintered tungsten carbide substrate body. This meets the claimed limitation of a presintered substrate similar to Applicants disclosure of a partially densified substrates being combination of a fully and partially densified substrates.

JP 53-134804 discloses providing a substrate comprising a WC-Co sintered hard alloy plate and a paste of WC-Co powder applied to the plate. This meets the claimed limitation of a presintered substrate similar to Applicants disclosure of a partially densified substrates being combination of a fully and partially densified substrates.

Conclusion

(10)

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melvin Curtis Mayes whose telephone number is 571-272-1234. The examiner can normally be reached on Mon-Fri 7:30 AM - 4:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Phillip C. Tucker can be reached on 571-272-1095. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Melvin Curtis Mayes
Primary Examiner
1791

MCM
October 15, 2007